

BCDA Activities – September 04

Highlights

- Upgraded EPICS and VME processor on ioc4idb and ioc4idd. Upgraded EPICS on ioc4ideps
- Added new EPICS experimental station (8-ID-E) at IMMY-CAT.
- Released device support for both the OMS MAXv and Delta Tau PMAC-VME controllers.
- We have recruited an EPICS application developer to replace Eric Boucher.

Specific beamline/XOR support

XOR-1BM:

- Met with Jan and Ali to discuss controls issues for the 1bm beamline. They requested several enhancements/fixes as well as new features.
- Met with Yujie Wang, Jin Wang, and several others to discuss the new mono going into 1BM-B. We now have a plan to support controls for the mono.

XOR-2:

- Designed custom cable for EPICS operation of picomotors, we fabricated. Installed the cable and tested motor operation.
- Worked with Andrei Tkachuk to customize scans for his experiment in the upcoming run. Demonstrated some of the tools in synApps.
- Built, tested and installed an 8-channel TTL inverter (simple proto box). This was needed for running XIA filters with UNI-CAT software.
- Tomography --Worked with Francesco DeCarlo on an upgrade plan for the tomography cluster.
- Resolved boot-up communication problem with PI C843 motor controller.
- Investigated, intermittent PI C843 controller communication hang-up.
- Diagnosed and fixed a problem with devXxKepco4886. In the new firmware revision of this interface board, the allowed syntax for several commands was changed.
- Showed Andrei Tkachuk how to scan a serial device for which no device support exists (i.e., how to use a serial_OI_block).
- Assisted Andrei Tkachuk from 2BM in accessing IDLVM tools: scanSee, hdfb from beams server and gave a short demo how to run scanSee and hdfb.

XOR-4 ID:

- ioc4idb EPICS software upgraded to synApps 4.5, hardware to MVME5100 with SBS VIPC626 IP-carrier
- ioc4idd EPICS software upgraded to synApps 4.5, hardware to MVME5100 with SBS VIPC626 IP-Carrier
- ioc4ideps EPICS software upgraded to synApps 4.5

MHATT-CAT - Sector 7:

- Met with Eric Landahl to discuss table-record performance, and a possible new table geometry.
- Assisted in fault finding on a new Xycom XY540 installation. Found and fixed a bug in the device driver.
- Started converting Xycom XY540 device/driver support to EPICS 3.14

IMMY-CAT - Sector 8:

- MultiTau cluster
 - Created parallel process application to do multitau. Played around with optimization for a little while. Acquired some performance numbers for the parallel system as well as a single processor system for comparison.
- Converted 8-ID-E microdiffraction station from SPEC to EPICS
 - Setup Epics application/iocboot directories to support this station devices.
 - 3x OMS58 Stepper Controllers
 - 2x Mdrive Servo Controllers
 - 1x NewFocus Picomotor Controller
 - 2x SRS Current PreAmps
 - 1x Joerger Scaler
 - 2x XIA Slit Stages
 - 3x Mercury 3000 Encoders (Interfaced to OMS58-4E)
 - Configured and tested Canberra AIM w/ADC module
 - Configured top level engineering MEDM screen
- Started work on a second EPICS control system for the 8-ID-E Station
 - Configured and installed MVME5100 in new VME crate.
 - Helped debug terminal server connection to this crate and the A station.
- Configured new Linux workstations to work with EPICS client programs
 - Worked this IT (M. Sheehan) to debug problems with running MEDM.
- 8-ID-I: Newport MM4006 motor controller was added to this station.
 - This model is now being tested with the MM4005 device support
- Coordinated work between Sector 8 and P. Fuesz.
 - Motor cables
 - OMS58 Transitions Modules
 - Mercury Encoder to OMS58 cable adapters.
- Modified motor record processing such that if the motor record is processed and there are no functions to perform (i.e., no current or outstanding move request) then the motor record will perform a status update using the STUP field.
- Helped diagnose mca ICB problem (bad 6V power supply)

CMC-CAT – Sector 9:

- Helped diagnose mca ICB problem (unrecognized device)

BIOCAT – Sector 18:

- More work with David Gore on pmac and related build problems in EPICS 3.14.5.

PNC-CAT – Sector 20:

- Helped Dale Brewe build synApps 4.6

GM/CA – Sector 23:

- Worked with S. Stepanov to mount the EPICS gateway filesystem .This was done to help debug the DirectNet driver. It seems that the Linux cross compiler does not work with this driver.

NE-CAT:

- Helped Yang <?> build EPICS example apps.

NANOCAT – Sector 26:

- Hooked the control system for the nanoprobe back up in L0128 after its move from sector 8.
- Hooked up resistive pots for resolution and accuracy testing in the hopes of using them as a “first line” absolute position system.
- Started gathering the parts and information needed to start converting the PI motors from labview control to directly interfacing them into EPICS.
- Set up PI motor with a resistive pot so as to acquire accuracy and resolution information about the resistive pots installed on the nanoprobe. Used the SDDS tools to run a series of scans over 4mm in 5um steps to acquire performance data about the resistive pots.
- Acquired information about what facilities and services need to be installed to begin commissioning S26 when their devices start arriving early next year.

UNICAT – Sector 33:

- Figured out how a spec macro can test for the completion of an EPICS operation it started. Specifically, Pete Jemian wanted to trigger a serial-port read, using the EPICS serial record, and poll something to determine when the read had completed (apparently, spec macro can't use callbacks or channel-access monitors). Any EPICS record can forward-link to a calc that simply increments its own value every time it processes, and most synApps iocs load several spare instances of the database, “serial_OI_block.db”, which is intended for run-time programming, and which has a serial record forward linked to an sCalcout record.

XFD-Labs:

- Worked with IT to identify and disable X-terms, which are now unsupported and a security risk. Helped plan to replace 2 X-terms with PC's
- Replaced a non-working Sun monitor. Demonstrated to lab user how to use helpdesk for solving another problem with the workstation, which turned out to be a bad graphics card. Stayed involved until the problem was resolved.

- Assisted Abu Saleem Khaliefeh from X-ray Lab in setting up environment and using new 'sscan' object for MDA files to do image data manipulations from different scans.

General

Made FY04 year-end orders, received: 2 MVME5100 boards, 2 VME crates, 4 ACS motor drivers.

Surveyed CATs for Motorola VME controller info, because of End-Of-Life issues. Compiled responses, organized data, and communicated the results.

Began looking at stepper motor drives that might give us another “standard” recommended option besides the stepPak.

Updated BCDA web pages with the latest info on VME crates.

CCD Image Server

- Started looking at what needs to be done to upgrade to 3.14.
- Started implementing some requested features for the next release.

Access Grid

- Kept pinging IT about their progress getting something up and running.

EPICS Builds

- Built EPICS base on Windows.
- Built and tested the Scan Record and the Calc Record on Windows as stand alone Apps.
- Tried building the Motor Record on windows, but ran into a few issues. It took a while to figure out how to get the motorExApp to link. Then the issue was the softIOC hung after calling iocInit. In the end I think all the problems have been traced down and I was successful in getting the motor record to run with soft motor support as a softIOC under windows.

Development Cluster

- Speced and ordered a smallish parallel processing cluster for development to support Tomography and Multitau activities.

Other User Support

- Helped Yong Chu gather some equipment to set up a test of some optics/CCD cameras he's looking into purchasing.
- Communicated with Operational Analysis group about how best to implement global data logging for the beamlines—specifically S26 to start.
- Worked with Micheal Bray trying to integrate a CCD camera into a Visual Basic program of his. I have a test program that talks fine with the CCD, but there were some issues with the Visual Basic interface to this code. We managed to fix some issues, but not all of them.

- Upgraded the CCD Image Server on one of the machines Andrei Tkachuk uses. Also helped him with reading HDF files from IGOR.
- Had some conversations with Mike Borland and Bob Soliday about global logging of beamline PVs.
- Had a conversation with Tim Madden about support for Bruker Detectors.
- Had a conversation with Christoph Rau about how best to take advantage of the CCD Image Server as well as what additional features he might like to have.

Developed motorRecord support for New Focust Picomotor Controller 8750

- Added motorApp/newFocusSrc to synApps motor directory.

Acquired the VMETRO Vanguard VME Bus Analyzer

Made a limited release (i.e., not yet available on motor web page) of the motor record (R5-4) that include support for both the OMS MAXv and Delta Tau PMAC-VME controllers.

LDRD committee work

Wrote documentation for the busy record.

Modified scanparmRecord to check links before attempting to use them, and to support multi-dimensional, multi-positioner scans. Modified scanParm2Pos.db and scanParm2Pos.adl to permit scan parameters for which the two positioners and the target scan record are all in different ioc's.

Building, testing, and writing docs for synApps 5.1

Updated synApps web pages.

Spent a day with Python, trying to figure out how to make CA-event-driven widgets (e.g., BLT plot for the sscan record, and related megawidgets) survive CaChannel exceptions and their consequences.

Searched the web for new motor controllers/drivers.

NSLS

- Helped Peter Siddons deal with CaChannel exceptions (in python code calling CaChannel through my interface, ca_utils.py).

Upgraded the IDL program plot2d.pro such that it can also accept 2d data array from an ascii file

Expanding sscan.pro such that it can handle 4D scan MDA files and provide user interface for 4D array data slicing

Group leader attended the APS Scientific Strategic Planning meeting held at Lake Geneva.

EPICS classes continued through the month. Group members were heavily involved with organization and the course web site.